WHAT IS CLAIMED IS:

1.   1.   A system for updating a control program comprising:

2.   a stored control program unit;

3.   a maintenance management server coupled with the stored control program

4. unit via a public network; wherein

5.   when the maintenance management server sends an instruction to

6. update the control program to the stored control program unit, the maintenance management

7. server sends authentication data to the stored control program unit through the public

8. network; and

9.   a control program upload server coupled with the stored control

10. program unit; wherein the control program upload server, after receiving and validating the

11. authentication data via Internet, sends a control program update for processing by the stored

12. control program unit.

1.   2.   The system of claim 1 wherein the control program upload server

2. maintains a key history file comprising a plurality of issued authentication keys, wherein said

3. authentication data comprises one key of said plurality of issued authentication keys.

1.   3.   The system of claim 1 wherein said stored control program unit,

2. comprises :

3.   a maintenance communication module for receiving said instruction and said

4. authentication data from said maintenance management server,

5.   a device download controller module for receiving the control program

6. transferred from said control program upload server,

7.   and a program update module for storing said control program received by

8. said device download controller module to a memory.

1.   4.   The system of claim 1 wherein said stored control program unit,

2. comprises: a maintenance communication module for receiving said instruction and said

3. authentication data from said maintenance management server, and a program file for

4. receiving the control program transferred from said control program upload server.

1.   5.   The system of claim 1 further comprising:

2.   a repeater unit, comprising one gate coupled with said stored control program

3. unit through a Local Area Network, and another gate coupled with the Internet, wherein when

4   commanded by said stored control program unit, said repeater unit transfers said control

5   program from said control program upload server to said repeater unit .

1   6.   The system of claim 5 wherein said repeater unit only transfers said

2   control program from said control program upload server, when said control program is not

3   stored in said repeater unit.

1   7.   A method for updating a control program stored in a computer system

2   at a first location, by transferring an update control program from an update server at a

3   second location to said computer system at said first location via Internet, said method

4   comprising:

5   sending an update command from a maintenance server at a third location to

6   said computer system via a first communications network, said update command comprising

7   at least one instruction for said computer system to get said update control program from said

8   update server;

9   executing said command by said computer system;

10   receiving said update control program by said computer system from said

11   update server via a second communications network, including the Internet; and

12   updating said control program with said update control program.

1   8.   The method of claim 7 wherein said control program is a control

2   program of a device controller.

1   9.   The method of claim 7 wherein said control program is a   control

2   program of a disk controller.

1   10.   The method of claim 7 wherein said computer system comprises a

2   download controller coupled with a device controller, and wherein said device controller

3   comprises said control program, and said receiving further comprises:

4   downloading said update control program from said update server by said

5   download controller; and

6   sending said update control program from said download controller to said

7   device controller.

1   11.   The method of claim 7 further comprising sending authentication data

2 from said maintenance server to said computer system; and using said authentication data to

3 establish a connection between said computer system and said update server.

1   12.   The method of claim 7 wherein said executing said command

2 comprises establishing a file transfer protocol (ftp) connection with said update server.

1   13.   The method of claim 7 further comprising returning a status of the

2 updating to said maintenance server.

1   14.   A remote console system for maintaining a control program of a disk

2 controller (DKC) of a plurality of disk controllers, said disk controller comprising a Service

3 Processor (SVP), said remote console system comprising:

4   a remote console download controller coupled with said SVP and operably

5 disposed to:

6   receiving a file transfer request from said SVP, said file comprising

7 said control program;

8   sending said file transfer request to an update server;

9   receiving said file from said update server; and

10   sending said file to said SVP.

1   15.   A storage device maintenance method for updating a control program

2 stored by a device controller of a storage system , said method comprising:

3   receiving information, comprising authentication data, by said storage system

4 related to updating said control program via a first communication connection;

5   sending a request, comprising said authentication data, for an updated control

6 program to an upload server via a second communication connection, comprising an Internet

7 connection;

8   receiving said updated control program from said upload server via said

9 second communication connection; and

10   using said updated control program to update said control program.

1   16.   The method of claim 15 wherein said authentication data comprises

2 upload server password and login identifier.

1   17.   The method of claim 15 wherein said request further comprises control

2 program version information.

1   18.   A storage system for maintaining a control program of a disk controller

2 (DKC) comprising:

3   a first disk controller of a plurality of disk controllers, wherein said first disk

4 controller receives information, comprising authentication data, related to updating said

5 control program from a maintenance center via a public network; and

6   a download controller responsive to said first device controller and coupled

7 with said plurality of device controllers, wherein said download controller performs

8 operations comprising:

9   sending a request, comprising said authentication data, for an updated control

10 program to an update server via an Internet connection;

11   receiving said updated control program from said update server via said

12 Internet connection; and

13   distributing said updated control program to said plurality of disk controllers.

1   19.   The system of claim 18 wherein said public network is a network

2 comprising a router, wherein said router is coupled with said maintenance center and said

3 computer center.

1   20.   A maintenance system for updating a control program of a device

2 controller, said control program stored at a computer center serviced by said maintenance

3 center, said system comprising:

4   a storage system for storing an authentication key for accessing a development

5 center, comprising an upload server, and a file location having a location of an updated

6 control program on said upload server, wherein said authentication key and said file location

7 are received from said upload server;

8   a processor for sending information, comprising an instruction, said file

9 location and said authentication key, to said computer center a via public network, said

10 instruction requesting an updated control program from said upload server; and

11   an update feedback module for receiving a result of executing said instruction

12 by said computer center.

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1   21. The maintenance system of claim 20 further comprising an input

2 module for receiving a user request, comprising, said instruction.

1   22. The maintenance system of claim 21 wherein said request further

2 comprises, a product type, product serial number, and a control program version.

1   23. The maintenance system of claim 20 wherein said result is displayed

2 on a display screen, said result comprising an update result.

1   24. The maintenance system of claim 20 wherein said result is further sent

2 to a customer management center.

1   25. The maintenance system of claim 24 wherein said result is sent from

2 said customer management center to a user.

1   26. The maintenance system of claim 25 wherein said result is displayed

2 real-time to said user.

1   27. A computer readable medium for storing code for updating a   control

2 program of a stored control program unit, said computer readable medium comprising:

3   code for receiving information, comprising authentication data, by said

4 computer center related to updating said   control program via a first communication

5 connection;

6   code for sending a request, comprising said authentication data, for an updated

7 control program to an upload server via a second communication connection, comprising an

8 Internet connection; and

9   code for receiving by a download controller said updated control program

10 from said upload server via said second communication connection.

1   28. The computer readable medium of claim 27 further comprising code

2 for distributing said updated control program from said download controller to said stored

3 control program unit.

1   29. A storage device maintenance system for transferring an update to a

2 control program used in a device storage system, comprising a plurality of disk controllers,

3 from a control program upload server via an Internet connection, comprising :

4   a maintenance management server for sending an instruction to update the

5   control program;

6   a specialized device controller of the plurality of device controllers for

7   receiving the instruction from the maintenance management server through a public

8   telephone network;

9   a remote console download controller coupled with the specialized device

10   controller, the specialized disk controller processing the instruction and instructing the

11   remote console download controller to download the update from the control program upload

12   server via the Internet, wherein the update is stored in a first program file coupled with the

13   remote console download controller; and

14   the plurality of disk controllers coupled with the remote console download

15   controller for receiving the update from the first program file.

1   30.   The computer system of claim 29 wherein a disk controller of the

2   plurality of disk controllers comprises a DKC download controller, a program update

3   controller, and a second program file.

1   31.   The computer system of claim 30 wherein the second program file

2   receives the update from the first program file.

1   32.   The computer system of claim 31 wherein the update is received by the

2   second program file independent of an associated DKC download controller.

1   33   A system for updating a control program stored at a device controller,

2   said device controller at a computer center, said system comprising:

3   means for receiving information, comprising authentication data, related to

4   updating a control program from a maintenance center via a first connection;

5   means for sending a request, comprising said authentication data, for said

6   updated control program to an upload server via a second connection;

7   means for receiving said updated control program from said upload server via

8   said second connection; and

9   means for distributing said updated control program to said device controller.

1   34.   A maintenance system for updating a control program, said control

2   program stored at a computer center serviced by said maintenance center, said system

3   comprising:

4   means for storing an authentication key for accessing a development center,

5   comprising an upload server, and a file location having a location of an updated   control

6   program on said upload server, wherein said authentication key and said file location are

7   received from said upload server;

8   means for sending information, comprising an instruction, said file location

9   and said authentication key, to said computer center a via public network, said instruction

10   requesting said updated control program from said upload server; and

11   means for receiving a result of executing said instruction by said computer

12   center.

1   35.   A system for updating a control program comprising:

2   means for sending authentication information to access an update server,

3   having a control program update, to a stored control program unit from a maintenance

4   management server;

5   means for validating the authentication data received by the update server

6   from the stored program control unit , wherein the update server is coupled with the stored

7   program control unit via Internet; and

8   means for receiving the control program update by the stored control program

9   unit from the update server.

1   36.   A computer-readable data transmission medium containing a data

2   structure, said data structure for sending information from a maintenance server to a

3   computer center, comprising:

4   a first portion comprising an update mode for updating a   control program in

5   the computer center;

6   a second portion comprising a server authentication key for access to an

7   upload server having an updated control program; and

8   a third potion comprising a file location on the upload server of the updated

9   control program.

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